Patent Claims

1. A process for the production of L-lysine comprising:

a) fermenting a medium suitable for the production of L-lysine with an L-lysine producing coryneform bacterium that is sensitive to one or more diaminopimelic acid analogues for a time and under conditions suitable for the production of L-lysine in the medium or in the bacterium, and optionally,

b) isolating L-lysine from the fermentation medium or from the bacterium, so that ≥ 0 to 100% of the constituents from the fermentation broth and/or from the biomass are present.

2. The process of Claim 1, wherein said bacterium has at least one gene of the biosynthesis pathway of L-lysine enhanced.

3. The process of Claim 1, wherein said bacterium has one or more metabolic pathways that reduce the formation of L-lysine at least partially switched off.

4. The process of Claim 1, wherein said coryneform bacterium has one or more of the following genes enhanced or overexpressed:

the gene lysC coding for a feedback-resistant aspartate kinase,

the gene dapA coding for dihydrodipicolinate synthase,

the gene gap coding for glyceraldehyde-3-phosphate dehydrogenase,

the gene pyc coding for pyruvate carboxylase,

the gene zwf coding for glucose-6-phosphate

dehydrogenase,

simultaneously the gene lysE coding for the lysine export protein,

the gene zwa1 coding for the Zwal protein,

the gene lysA coding for diaminopimelic acid decarboxylase,

the gene sigC coding for the sigma factor C,

the gene tpi coding for triose phosphate isomerase, or

the gene pgk coding for 3-phosphoglycerate kinase.

5. The process of Claim 1, wherein said bacterium has one or more genes from the following group attenuated:

the pck gene coding for phosphoenol pyruvate carboxykinase,

the pgi gene coding for glucose-6-phosphate-isomerase,

the gene deaD coding for DNA helicase,

the gene citE coding for citrate lysase,

the gene menE coding for O-succinylbenzoic acid CoA-ligase,

the gene mikE17 coding for the transcription regulator MikE17,

the gene poxB coding for pyruvate oxidase, or

the gene zwa2 coding for the Zwa2 protein.

6. The process of Claim 1, wherein said coryneform bacterium is sensitive to 4-fluorodiaminopimelic acid.

7. The process of Claim 1, wherein said coryneform bacterium is sensitive to 4-hydroxydiaminopimelic acid.

8. The process of Claim 1, wherein said coryneform bacterium is sensitive to 4-oxodiaminopimelic acid.

9. The process of Claim 1, wherein said coryneform bacterium is sensitive to 2,4,6-triaminopimelic acid.

10. The process of Claim 1, wherein said bacterium is Corynebacterium glutamicum.

11. The process of Claim 1, wherein in said bacterium is Corynebacterium glutamicum, which is sensitive to 4-hydroxydiaminopimelic acid.

12. The process of Claim 1, wherein said bacterium is identified as Brevibacterium.

13. A mutant of a coryneform bacterium that produces L-lysine, which is sensitive to one or more of the diamino-pimelic acid analogues selected from the group consisting of 4-fluorodiamino-pimelic acid, 4-hydroxydiaminopimelic acid, 4-oxo-diaminopimelic acid and 2,4,6-triaminopimelic acid.

14. The process of Claim 1, wherein said bacterium is a mutant of a coryneform bacterium that produces L-lysine, which is sensitive to one or more of the diaminopimelic acid analogues selected from the group consisting of 4-fluorodiaminopimelic acid, 4-hydroxydiaminopimelic acid, 4-oxo-diaminopimelic acid and 2,4,6-triaminopimelic acid.

15. A feedstuff additive produced by the process of Claim 1, wherein said additive comprises the biomass and/or constituents from the fermentation broth formed during the fermentation of the L-lysine-producing microorganisms in an amount of not more than 0% to 5%.

16. A feedstuff additive produced by the process of Claim 1, wherein said additive comprises the biomass and/or constituents from the fermentation broth formed during the fermentation of the L-lysine-producing microorganisms in an amount of 90% to 100%.

17. A liquid fraction of the fermented medium of Claim 1.

18. A solid fraction of the fermented medium of Claim 1.

19. A dairy, swine, beef, horse, poultry, aquaculture or pet feed comprising all or part of the fermentation medium produced by the process of Claim 1.

20. A method for feeding an animal comprising administering a composition comprising the fermentation medium produced by the process of Claim 1.

21. A method for making a feed comprising admixing L-lysine or a solid or liquid fraction comprising L-lysine, which is produced by the process of Claim 1, with one or more other feedstuff ingredients.